BUREAU OF WATER

South Carolina Department of Health and Environmental Control

SHELLFISH MANAGEMENT AREA 15

2003 ANNUAL UPDATE

Shellfish Sanitation Program

Water Monitoring, Assessment and Protection Division
Environmental Quality Control - Bureau of Water
2600 Bull Street
Columbia, South Carolina 29201

July 2003

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2003 ANNUAL UPDATE

[Data Thru December 2002]

Shellfish Management Area 15
Shellfish Sanitation Program

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Data Inclusive Dates:
01/01/00 thru 12/31/02

Classification Change:
____Yes __X__No

Shoreline Survey Completed: Yes

Prior Report & Date: Annual -2002

(I)ncreased/(D)ecreased/(N)one:
___N__ Approved
___N__ Cond.Approved
___N__ Restricted
___N__ Prohibited

SUMMARY

Monitoring at four stations in Battery Creek indicates a slight improvement in water quality subsequent to the 2002 Annual Update. Station 15-25 is located within the Battery Creek Conditionally Approved area. The remaining three stations, 15-28, 15-29, and 15-30, are located within a Restricted portion of Battery Creek, upstream of the Conditionally Approved area. The current water quality classification appears to be a direct result of the drought conditions experienced over the last four years, and there exists a high probability that water quality at the aforementioned stations will revert to a Restricted classification once normal rainfall patterns resume. Therefore, the harvesting classifications will remain the same as in the 2002 Annual Update.

Water quality at Station 15-02, Mulligan Creek at Brickyard Creek, currently and historically meets the statistical criteria for an Approved classification. This station was previously located within an administratively Prohibited closure zone in Brickyard Creek. The nearest wastewater treatment plant (WWTP) discharge is from the USMC Air Station WWTP discharging into Albergottie Creek. The distance between Station 15-02 and the Air Station discharge point is approximately 3.25 miles. Additionally, there is a tidal node in Brickyard Creek that indicates tidal exchange occurs between Mulligan Creek and the Coosaw River. In the previous Annual Update, the Prohibited portion of Brickyard Creek, from Station 15-01, near the confluence with McCalley's Creek to Station 15-02, Mulligan Creek at Brickyard Creek, was upgraded to Approved. SCDNR designated the Approved area as Culture Permit C-123. Sampling at a new location, Station 33, in McCalley Creek, 0.5 miles upstream of station 15-01A began in January 2002.

Widening of Highway 280, which runs parallel to the Western shore of Battery Creek, is progressing. The road is being be widened from two to five lanes (two travel lanes and a 15 foot wide paved median) and will have curb and gutter. Five stormwater treatment devices designed to remove trash, sediment, and oil and grease from stormwater prior to discharge into Battery Creek are included in this project.

INTRODUCTION

PURPOSE AND SCOPE

The authority to regulate the harvest, sanitation, processing and handling of shellfish is granted to the South Carolina Department of Health and Environmental Control by Section 44-1-140 of the Code of Laws of South Carolina, 1976, as amended. The Department promulgated Regulation 61-47 which provides the rules used to implement this authority and outlines the requirements applied in regulating shellfish sanitation in the State This regulation specifically addresses classification of shellfish harvesting areas and requires that all areas be examined by sanitary and bacteriological surveys and classified into an appropriate shellfish harvesting classification.

The National Shellfish Sanitation Program (NSSP) Guide For The Control Of Molluscan Shellfish is used by the United States Food and Drug Administration (USFDA) to evaluate state shellfish sanitation programs. The NSSP Model Ordinance requires that a sanitary survey be in place for each growing area prior to its use as a source of shellfish for human consumption and prior to the area's classification as Approved, Conditionally Approved, Restricted, or Conditionally Restricted. Each sanitary survey shall be updated on an annual basis and accurately reflect changes which have occurred within the area. Requirement of the annual reevaluation include, at a minimum, field observations of pollution sources, an analysis of water quality data consisting of the past year's data in combination with appropriate previously collected data, review of reports and effluent samples from pollution sources, and review of performance standards for discharges impacting the growing area. A brief report documenting the findings shall also be provided.

The following criteria, consistent with the NSSP Model Ordinance and S. C. Regulation 61-47, are used in establishing shellfish harvesting classifications:

Approved - Growing areas shall be classified Approved when the sanitary survey concludes that fecal material, pathogenic microorganisms, and poisonous or deleterious substances are not present in concentrations which would render shellfish unsafe for human consumption. The Approved area classification shall be designated based upon a sanitary survey which includes water samples collected from stations in the designated area adjacent to actual or potential sources of pollution. For waters sampled under adverse pollution conditions, the median fecal coliform Most Probable Number (MPN) or the geometric mean MPN shall not exceed fourteen per one hundred milliliters, and not more than ten percent of the samples shall exceed a fecal coliform MPN of forty-three per one hundred milliliters (per five tube decimal dilution). For waters sampled under a systematic random sampling plan, the geometric mean fecal coliform Most Probable Number (MPN) shall not exceed fourteen per one hundred milliliters, and the estimated ninetieth percentile shall not exceed an MPN of forty three (per five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using NSSP Guidelines.

Conditionally Approved - Growing areas may be classified Conditionally Approved when they are subject to temporary conditions of actual or potential pollution. When such events are predictable, as in the malfunction of wastewater treatment facilities, non-point source pollution from

rainfall runoff, discharge of a major river, or potential discharges from dock or harbor facilities that may affect water quality, a management plan describing conditions under which harvesting will be allowed shall be adopted by the Department prior to classifying an area as Conditionally Approved. Where appropriate, the management plan for each Conditionally Approved area shall include performance standards for sources of controllable pollution, e.g., wastewater treatment and collection systems, evaluation of each source of pollution, and means of rapidly closing and subsequent reopening areas to shellfish harvesting. Memorandums of agreements shall be a part of these management plans where appropriate.

Restricted - Growing areas shall be classified Restricted when sanitary survey data show a limited degree of pollution or the presence of deleterious or poisonous substances to a degree which may cause the water quality to fluctuate unpredictably or at such a frequency that a Conditionally Approved classification is not feasible. Shellfish may be harvested from areas classified as Restricted only for the purposes of relaying or depuration and only by special permit issued by the Department and under Department supervision. For Restricted areas to be utilized as a source of shellstock for depuration, or as source water for depuration, the fecal coliform geometric mean MPN of restricted waters sampled under adverse pollution conditions shall not exceed eighty-eight per one hundred milliliters and not more than ten percent of the samples shall exceed a MPN of two hundred and sixty per one hundred milliliters for a five tube decimal dilution test. For waters sampled under a systematic random sampling plan, the fecal coliform geometric mean MPN shall not exceed eighty-eight per one hundred milliliters and the estimated ninetieth percentile shall not exceed an MPN of two hundred and sixty (five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using NSSP guidelines.

Conditionally Restricted - Growing areas may be classified Conditionally Restricted when they are subject to temporary conditions of actual or potential pollution. When such events are predictable, as in the malfunction of wastewater treatment facilities, non-point source pollution from rainfall runoff, discharge of a major river, or potential discharges from dock or harbor facilities that may affect water quality, a management plan describing conditions under which harvesting will be allowed shall be prepared by the Department prior to classifying an area as Conditionally Restricted. Where appropriate, the management plan for each Conditionally Restricted area shall include performance standards for sources of controllable pollution (e.g., wastewater treatment and collection systems and an evaluation of each source of pollution) and description of the means of rapidly closing and subsequent reopening areas to shellfish harvesting. Memorandums of agreements shall be a part of these management plans where appropriate. Shellfish may be harvested from areas classified as Conditionally Restricted only for the purposes of relaying or depuration and only by permit issued by the Department and under Department supervision. For Conditionally Restricted areas to be utilized as a source of shellstock for depuration, the fecal coliform geometric mean MPN of Conditionally Restricted waters sampled under adverse pollution conditions shall not exceed eighty-eight per one hundred milliliters and not more than ten percent of the samples shall exceed a MPN of two hundred and sixty per one hundred milliliters for a five tube decimal dilution test. For waters sampled under a systematic random sampling plan, the fecal coliform geometric mean MPN shall not exceed eighty-eight per one hundred milliliters and the estimated ninetieth percentile shall not exceed an MPN of two hundred and sixty (five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using NSSP guidelines.

Prohibited - Growing areas are classified Prohibited if there is no current sanitary survey or if the sanitary survey or monitoring data show unsafe levels of fecal material, pathogenic microorganisms, or poisonous or deleterious substances in the growing area or indicate that such substances could potentially reach quantities which could render shellfish unfit or unsafe for human consumption.

BACKGROUND INFORMATION

Shellfish Growing Area 15 consists of approximately 31,071 acres of shellfish growing area habitat located in Beaufort County. It consists of the Beaufort River and Brickyard Creek and their tributaries, including McCalley, Albergottie, Broomfield, Battery, Chowan, Ballast, Station, and Morse Island Creeks. The area's northern boundary is defined by McCalleys Creek's northern shore. The eastern boundary extends through Lady's Island to Highway 21, and continues to Morse Island Creek. The southern boundary is the Atlantic Ocean at the mouth of Port Royal Sound. The western boundary extends through Parris Island and follows the western shore of Battery Creek to the portion of McCalley Creek bordered by Highway 21.

The majority of the Area 15 shellfish resource and harvesting activity is located in Chowan, Distant Island and Wallace Creeks.

The harvesting classifications of Area 15 prior to this survey were as follows:

Prohibited (Administrative closure):

1) Brickyard Creek, from its confluence with Mulligan Creek at Station 15-02, to its confluence with Beaufort River

2) Albergottie Creek, from its headwaters to its confluence with Brickyard Creek

3) Broomfield Creek, from its headwaters to its confluence with Beaufort River

4) Factory Creek, entire waterbody

5) Cat Island Creek, entire waterbody

6) Creek and its tributaries, from Station 24 at the Highway 280 (Battery Creek) bridge to its confluence with Beaufort River.

7) Archers Creek, from the boundary with Area 17 to its confluence with Beaufort River

8) Ballast Creek, from the boundary with Area 17 to its confluence with Beaufort River

9) McCalley Creek, from station 15-01A to the headwaters

10) Battery Creek, from confluence with the Beaufort River to the southern Conditionally Approved boundary near Station 15-24.

11) Battery Creek Marina Closure Zone

Restricted:

Battery Creek, between Station 15-10 and the headwaters, excluding the Conditionally Approved Area.

Conditionally Approved:

1) Battery Creek, from Station 15-24 at the Hwy 280 (Battery Creek) bridge to Station 15-21, (excluding all administratively Prohibited closure zones). The Conditionally Approved area also includes stations 15-10, 15-25, 15-26, & 15-27. The portion of the main channel between stations 15-10 and 15-19 will be classified as Restricted.
2)Wallace Creek, the entire tributary, from its confluence with Chowan Creek at station 15-18 to its headwaters.

Approved:

Remaining portions of Area 15.

Station Addition/Deactivation/Modification: None

The shellfish industry in South Carolina is based on the harvest of the eastern oyster (*Crassostrea virginica*) and hard clams (*Mercenaria mercenaria*). Areas in South Carolina designated for commercial harvest by the South Carolina Department of Natural Resources (SCDNR) include State shellfish grounds, Culture permits, and Kings Grant areas. Seven shellfish Culture Permit Areas are designated in Area 15. Culture Permit C097 and C114 are leased to L.P. Maggioni & Company, C119, C120, and C123 are leased to Dusenbury Seafood, C80 is leased to Joseph Young, and C90 is leased to Perry Hall.

The general public is allowed to harvest on four state shellfish grounds and one Public Shellfish Ground in Area 15. State shellfish ground S064 is located on Parris Island, S094 in Morse Creek, S118 in Wallace Creek and S117 in Distant Island Creek. Recreational harvesting is allowed for clams and oysters in both areas, and commercial harvesting by licensed individuals is currently allowed on State Shellfish Grounds only, subject to seasons established by SCDNR. Recreational harvesting only is allowed on R121 in Wallace (Capers) Creek.

Shellfish harvesting season in South Carolina extends from September 16 through May 15, although actual dates may vary. SCDNR has the authority to alter the shellfish harvesting season for management purposes. The South Carolina Department of Health and Environmental Control has the authority to prohibit shellfish harvesting when necessary to ensure that all shellfish harvested in South Carolina waters are safe for human consumption.

POLLUTION SOURCE SURVEY

SURVEY PROCEDURES

Shoreline surveys of Area 15 were conducted by the Low Country District Shellfish Sanitation staff**,** by watercraft, vehicle, and on foot, during the survey period and are ongoing.

POINT SOURCE POLLUTION

Major sources of actual or potential pollution (see Figure 4):

Permitted Sources	Permit #/Type/ Discharge
Springs Ind/Wamchem NPL site	SC0046701/groundwater remed./McCalley Cr
Barnwell Resources	SC0046299/ groundwater remediation/ditch
USMC/ Beaufort Air Station WWTP	SC000825/0.75 MGD/pipe/Albergottie Cr.
Fast Fare	SC0046272/ groundwater remed./not built
O.C. Welch	SC0041726/ Oil/Water separator/ditch
City of Beaufort WWTP	SC0021016/2.0 MGD/diffuser/Beau. R.
BJW&SA / Shell Point WWTP	SC0042609/0.4 MGD/ diffuser/Beaufort River
USMC / Parris Is WWTP	SC0002577-001/3.0 MGD/pipe/ Beaufort River
USMC / Paris Is	SC0002577-003/boiler blowdown/ pipe /Beau.R.
Pleasant Point Plantation WWTP	ND0067393/ 0.1MGD/lagoon/ spray irrigation
Beachwood Mobile Home Park WWTP	ND0067091/0.04MGD/ spray field
Lady? s Island Elementary School WWTP	ND0000574/ spray field- Tied into sewer
Cat Island	ND0073962/ tile field- Tied into sewer
Marsh Harbor Boatyard	Marina- No pumpout facilities
Downtown Beaufort Marina	Marina- Pumpout facilities
Ladies Island marina	Marina- No pumpout facilities
Port Royal Landing	Marina- Pumpout facilities
Battery Creek Marina	Marina- No pumpout facilities (dry stack marina)
S.C. Ports Authority Port Royal Terminal	Marina (cargo ship dock)
Port Royal Seafood	Marina (commercial shrimp dock)

A. **Municipal and Community Waste Treatment Facilities** - The USMC/ Parris Island WWTP (3.0 MGD) is the largest permitted discharge into Area 15. The plant discharges into the portion of the Beaufort River that is classified as SFH waters and its permitted fecal coliform limits are 14/43 colonies per 100 ml.

The City of Beaufort (2.0 MGD) and BJW&SA/Shell Point WWTP (0.4MGD) each discharge through separate diffusers located near the McTeer Bridge (Highway 802). This portion of the Beaufort River is classified as SA waters and the permitted fecal coliform limits are 200/400 colonies per 100 ml.

The USMC/ Beaufort Air Station (0.75 MGD) discharges into Albergottie Creek. Albergotti Creek is classified as SA waters and the permitted fecal coliform discharge limits are 200/400 colonies per 100 ml.

B. **Industrial Discharges** - A groundwater remediation system at the site of the former Springs Industries/Wamchem industrial site discharges into the headwaters of McCalley? s Creek. There is no sewage and therefore no fecal coliform bacteria component of the discharge. Prior to the 2001 Annual Update, the SCDHEC Division of Health Hazard Evaluation reviewed the list of chemicals of concern for the Wamchem site and indicated that portions of McCalley Creek might be opened to shellfish harvesting. upstream to the proposed new station (15-33), which is approximately 1.3 miles downstream of the site. Sampling at the two existing stations, (15-01 and 15-01A), in McCalley Creek has been performed since the 1980's and both stations have always met the statistical criteria for an Approved classification. Based upon this information, the Shellfish Sanitation Section concluded that little potential existed for adverse health affects associated with the groundwater remidiation system discharge and the portion of McCalleys Creek between Staion 15-01 and Station 15-01A was Approved in the 2001 Annual Update.

Other permitted industrial dischargers into waters of Area 15 include: Barnwell Resources which is a stormwater discharge from a construction and demolition (C&D) landfill; and O.C. Welch, which is an oil/water separator at a car dealership. In addition, the BJW&SA Shell Point WWTP has an approved pretreatment program and accepts some industrial wastes from businesses located in the Beaufort Industrial Park.

C. **Marinas** – S.C. Regulation 61-47, Shellfish defines *Marina* as "any water area with a structure (docks, basin, floating docks, etc.) which is: 1) used for docking or otherwise mooring vessels; and, 2) constructed to provide temporary or permanent docking space for more than ten boats, or has more than 200 linear feet of docking space." Currently, there are seven marina locations in Area 15. Port Royal Landing, Lady? s Island Marina, and Downtown Beaufort Marina have marine sewage pump-out facilities. Battery Creek and Marsh Harbor Boatyard (both have dry stack storage) do not have pumpout facilities. Additionally, the S. C Ports Authority, Port Royal Terminal, operates cargo ship docks and Port Royal Seafood operates a commercial shrimp dock. Both of these facilities are located on Battery Creek. A pump-out vessel has been permitted to operate at the Downtown Marina of Beaufort. There are numerous private boat docks throughout Area 15.

D. **Radionuclides** - Sources of radionuclides have not been identified within Area 15, and radionuclide monitoring has not been conducted. No other source of poisonous or deleterious substances has been identified within the area.

NONPOINT SOURCE POLLUTION

A. **Stormwater** - Stormwater runoff impacts water quality by transporting fecal coliform bacteria (and other pollutants) from land to the shellfish growing area.

Stormwater from roads, residences, and agricultural land is directed to the lowest point of elevation that is typically the nearest creek or marsh. In addition, there are freshwater wetland areas, ditches, and impoundments that drain into tidal creeks.

Beaufort County and its municipalities (Hilton Head, Port Royal, Bluffton, and the City of Beaufort) now have a Stormwater Utility. The utility is currently engaged in a rate study, mapping of drainage systems in the county, and water quality studies.

Widening of Highway 280, which runs parallel to the Western shore of Battery Creek, is progressing. The road is being be widened from two to five lanes (two travel lanes and a 15 foot wide paved median) and will have curb and gutter. Five stormwater treatment devices designed to remove trash, sediment, and oil and grease from stormwater prior to discharge into Battery Creek are included in this project.

Most land disturbing activities in South Carolina must comply with the Stormwater Management and Sediment Reduction Act of 1991. The final regulations, effective on June 26, 1992, establish the procedures and minimum standards for a statewide stormwater management program. For activities in the eight coastal counties, additional water quality requirements are imposed. For all projects, regardless of size, which are located within one-half mile of a receiving water body in the coastal zone, the criteria for permanent water quality ponds having a permanent pool is that they are designed to store the first ? inch of runoff from the entire site over a 24- hour period or storage of the first one inch of runoff from the built-upon portion of the property, whichever is greater. Storage may be accomplished through retention, detention, or infiltration systems, as appropriate for the specific site. In addition, for those projects that are located within 1000 feet of shellfish beds, the first one and one half inches of runoff from the built-upon portion of the property must be retained on site. Since 1992, these regulations have been applied to the development of residential subdivisions, golf courses, and business areas.

B. Agricultural Waste - During a shoreline survey of the Wallace Creek area, small herds of cattle were documented. These herds were located adjacent to ditches leading to Wallace Creek and thus pose a potential threat to water quality within the Wallace Creek growing area. Further sampling and investigation of these areas is proposed.

C. **Individual Sewage Treatment and Disposal (ISTD) Systems** – Typically, older homes and businesses in Area 15 utilize ISTDs while the majority of new construction is serviced by central sewer collection and distribution systems. Picket Fences, adjacent to Battery Creek, initially permitted for 16 lots to use septic tanks, will convert to central sewer collection in approximately two years. Homes in more rural areas, such as those on St. Helena Island adjacent to Wallace Creek, utilize ISTDs.

D. **Wildlife and Domestic Animals** - This area supports populations of white-tailed deer, raccoons, wading birds, migratory waterfowl, and other wildlife, which may contribute to fecal coliform levels in some areas. Domestic animals present in the area include dogs, cats, horses, and goats. Large populations of ducks and geese, inhabiting numerous ponds and impoundments in the Area 15 management area, likely contribute to fecal coliform loading within the shellfish growing area.

E. **Boat Traffic** - The Atlantic Intracoastal Waterway (AIWW) begins at the Area 15 northern boundary at the confluence of Brickyard Creek and Coosaw River. The waterway extends through Beaufort River and Port Royal Sound and eventually reaches the area's southern boundary at Skull Creek at Hilton Head Island. Numerous commercial and recreational vessels utilize this North/South route. There are seven public boat landings in Area 15.

F. **Hydrographic and Habitat Modification** - Hydrographic and habitat modification in estuarine areas requires both State and Federal approval. Portions of the AIWW require maintenance dredging. The U.S. Army Corps of Engineers utilizes designated tracts of land adjacent to the AIWW as dredge spoil sites.

A new Chowan Creek bridge (Highway 21) will be longer and higher than the old bridge. The construction plans specify removal of some of the old earthen causeway. This should increase water flow through the area.

G. **Marine Biotoxins** - There have been no documented occurrences of toxic algae affecting water quality in Area 15. The Department participates in a State Task Force on toxic algae and maintains a toxic algae emergency response team.

HYDROGRAPHIC AND METEOROLOGICAL CHARACTERISTICS

PHYSIOGRAPHY

Area 15 is part of the Broad River estuary, which is a drowned river valley system and the largest of Sea Island Coastal Region estuaries (219 square kilometers). This estuary, which includes

Broad River, Beaufort River, Port Royal Sound, and several tidal tributaries, includes an extensive system of marshes, tidal creeks, and sea-islands. The average depth of the estuary is approximately 7 meters at mid tide level. Broad deep natural channels exist throughout Port Royal Sound, Beaufort River, and major tidal tributaries. Large shoal areas occur primarily in the Beaufort River and Port Royal Sound. The AIWW (12 feet at MLW) is the only maintained navigational channel (NOAA, 1994).

Tides - Tides in Area 15 are semidiurnal, consisting of two low and high tides each lunar day. Mean tidal range within Port Royal Sound ranges from 6.15 feet. to 8.15 feet. Spring tidal range is between 7.13 feet and 9.45 feet (www.co-ops.nos.noaa.gov). The greatest tidal ranges of the year typically occur around full moon during the months of September through December. There is considerable variation in the normal tide range due to the prevailing strength and direction of winds.

Rainfall - Rainfall data used in this survey is collected at a weather station located at the City of Beaufort WWTP (station 380559- Beaufort 7 SW). The rainfall gauge is typically read at about 7:00 AM and the rainfall amount is recorded for that date. As most shellfish samples are collected after 7:00 AM, the rainfall for the sample date + 24 hours has been added to the rainfall summary table. Rainfall for the sample date + 24 hours may correlate better and help to explain elevated fecal coliform concentrations in sample results, particularly if there was zero rainfall on the date of or prior to sampling.

Annual rainfall is normally about 51.15", with August being the wettest month. Charts showing monthly and yearly rainfall amounts for the years 1997 through 2002 are attached. Approximately 40% of the annual rainfall falls in the three-month period from June to August. Weather patterns during this time period are often characterized by thunderstorms and shower activity of a short duration. In addition, these three months also have the highest numbers of days with rainfall greater than 1". The months of December through March historically have the greatest number of days with rainfall exceeding 0.10" and 0.50". Rainfall events during these months are typically of a longer duration.

The effects of El Niño were first experienced as early as March of 1997, in the form of decreased rainfall. Rainfall amounts were below normal until mid-summer when the warm phase El Niño effects were observed in the form of above normal rainfall. The full influence of El Niño with regard to rainfall was observed in the fall, when amounts were recorded in excess of the 30-year average. This “warm and wet” trend continued through April 1998. The 102-year (1895-1996) El Niño average rainfall for November to March for this region of S.C. is about 125% of the normal rainfall amount.

Winds - The prevailing wind direction between February and September ranges between South and South Southwest (180 to 200 degrees) and between October and January is North Northeast (20 degrees). The annual mean wind speed is 8.5 MPH, with August having the lowest (7.3 MPH) and March the highest (10.0 MPH) mean wind speed.

River discharges - There are no freshwater rivers that discharge directly into Area 15. The salinity structure is primarily determined by the seasonal freshwater discharge from the Coosawhatchie River and mean salinities vary less than 5ppt between typical high and low salinity periods. The northern portion of Area 15 receives some freshwater inflow into Brickyard Creek from the Coosaw

River.

WATER QUALITY STUDIES

DESCRIPTION OF THE PROGRAM

The Department currently utilizes a systematic random sampling (SRS) strategy within Area 15 in lieu of sampling under adverse pollution conditions. In order to comply with NSSP guidelines, a minimum of thirty samples are required to be collected and analyzed from each station during the review period. Sampling dates are computer generated prior to the beginning of each quarterly period thereby insuring random selection with respect to tidal stage and weather. Day of week selection criteria is limited to Mondays, Tuesdays, and Wednesdays due to shipping requirements and laboratory manpower constraints. Sample schedules are rarely altered.

During July 1998, an updated data analysis procedure was formalized. Samples utilized for classification purposes are limited to those samples collected in accordance with the SRS for a 36-month period beginning January 1 and ending December 31. This allows for a maximum of 36 samples per station yet provides a six-sample ? cushion? (above the NSSP required 30 minimum) for broken samples, lab error, breakdowns, etc. This also allows each annual report to meet the NSSP Triennial Review sampling criteria.

Seven hundred and seventy-seven surface water samples (<1.0 ft. deep) were collected for bacteriological analysis from twenty-two active water quality sampling stations in Area 15 during the period 01/01/00 through 12/31/02. Of this total, seven hundred fifty-seven routine samples were collected and analyzed for classification purposes in accordance with the Department's systematic random sampling plan. Sampling at Station 33, *McCalley Creek, 0.5 miles upstream of station 15-01A,* began in January 2002.

The samples were collected in 120 ml amber glass bottles, immediately placed on ice and transported by bus to the South Carolina Department of Health and Environmental Control's Trident District Environmental Quality Control laboratory at North Charleston, South Carolina or to the Low Country District laboratory in Beaufort. Upon receipt at the laboratory, sample sets that exceeded a 30-hour holding time or contained a temperature control > 10 degrees C. were discarded. Samples collected after September 1, 1986 have been analyzed using the five tube/three dilution modified A-1 method described by Nuefeld (1985).

Surface water temperatures were measured utilizing hand-held, laboratory-quality calibrated centigrade thermometers. Salinity measurements were measured in the laboratory using automatic temperature compensated refractometers. Additional field data include ambient air temperature, wind direction, tidal stage and date and time of sampling. Tidal stages were determined Nautical Software's Tides and Currents, Version 2 (1996).

MONITORING RESULTS

Stations 01, 01A, 10, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, and 30 meet the statistical criteria for an Approved classification. Stations 31 and 32 exceeded a fecal coliform MPN geometric mean value of 14 or a fecal coliform MPN estimated 90th percentile value of 43, thus meeting the statistical criteria for a Restricted classification.

Station 15-02 has less than the required thirty routine samples necessary for classification in accordance with the Systematic Random Sampling Plan. However, when data collected from November and December of 1999 is included in the data set, Station 15-02 meets Approved area criteria with thirty samples and a fecal coliform geometric mean MPN value of 6.1 and a fecal coliform estimated 90^{th} percentile MPN value of 20. Classifying station 15-02 as Approved based upon twenty-eight samples has the identical effect as classifying using the 1999 data.

Station 33 is a new station with 11 sample results for the review period. Station 33 was created in order to assess water quality with McCalley Creek with the intent of restoring that portion of the creek between Station 01A and Station 33 to an Approved classification.

For the Annual Update review period, all stations (10, 24, 25, 21, 26, and 27) in the Battery Creek Conditional Management area met the statistical criteria for Approved classification.

For the second consecutive year, Station 20 in the Wallace Creek Conditional Management area met the statistical criteria for an Approved classification, with a 90th percentile MPN of 15. The classification of Station 20 will remain Conditionally Approved.

For the calendar year 2002, analysis of samples collected at each station in the Battery Creek and Wallace Creek Conditional Areas while in the Open status indicates all stations meet the statistical criteria for Approved classification (see data sheets- Conditional Area in Open Status).

CONCLUSIONS

Based on review of fecal coliform bacteriological data and the pollution source survey, Area 15 is impacted by two sources of actual or potential pollution.

NONPOINT SOURCE RUNOFF

Stormwater runoff appears to be the major source of fecal coliform bacteria contamination in Area 15. Elevated fecal coliform bacteria concentrations associated with stormwater runoff affects water quality at stations located in the headwaters of Wallace Creek and in tributaries of Battery Creek. The impact of rainfall and stormwater runoff on fecal coliform bacteria concentrations was particularly evident during the El Niño event between November, 1997 and April, 1998 when the area received abnormally high rainfall. The resulting elevated fecal coliform bacteria concentrations adversely impacted shellfish harvesting classifications at numerous stations.

Possible sources of fecal coliform bacteria contamination include failing septic systems, pets, domestic animals such as horses and cows, wildlife, and drainage from roads and freshwater wetlands.

INDIVIDUAL SEWAGE TREATMENT AND DISPOSAL SYSTEMS

Homes adjacent to shellfish waters in Area 15 are served by either ISTDs or sewer. Homes in older developed areas utilize ISTDs while most newer developments are tied into sewer. Soils in most areas are considered to be suitable for ISTDs and systems should operate properly if maintained. Older, unsound systems represent a potential source of fecal coliform contamination in the Battery Creek and Wallace Creek areas, particularly during periods of heavy rainfall.

RECOMMENDATIONS

The mid-portion of Battery Creek was first classified as Conditionally Approved in the 1997 Annual Update. SCDNR has assigned Culture Permit C-080 to the area. While all stations in the Battery Creek Conditional Management area currently meet the criteria for an Approved water Classification, this may likely be the direct result of drought conditions the area has experienced over the last four years. Station 25 met the criteria for a Restricted water quality classification in the prior Annual Update. Therefore, the harvest classifications of stations 10, 24, 25, 26, 27 and 21 will remain Conditionally Approved. The rainfall amount required to close the area will remain at 1.20 inches in a 24-hour period. A Conditional Area Management Plan for Battery Creek follows this report.

Water quality at Station 20 in Wallace Creek currently meets the criteria for an Approved classification, with a 90th percentile MPN of 15. This also may be a direct result of the drought conditions the area has experienced over the last four years. Water quality at Station 20 was Restricted in the 2000 and 2001 Annual Updates and is impacted by rainfall. Therefore, to protect public health, the entire tributary of Wallace Creek to its confluence with Chowan Creek at Station 18 will remain classified as Conditionally Approved. The rainfall amount required to close the area will remain at 1.20 inches in a 24-hour period. A Conditional Area Management Plan for Wallace Creek follows this report.

The shoreline survey and bacteriological data review of shellfish Management Area 15 indicates that no changes in classification boundary descriptions are necessary. Harvesting water classifications of Area 15 will remain the same as in the 2002 Annual Update.

Prohibited (Administrative closure):

1) Brickyard Creek, from its confluence with Mulligan Creek at Station 02, to its confluence with Beaufort River
2) Albergottie Creek, from its headwaters to its confluence with Brickyard Creek
3) Broomfield Creek, from its headwaters to its confluence with Beaufort River
4) Factory Creek, entire waterbody
5) Cat Island Creek, entire waterbody
6) Creek and its tributaries, from Station 24 at the Highway 280 (Battery Creek) bridge to its confluence with Beaufort River.

7) Archers Creek, from the boundary with Area 17 to its confluence with Beaufort River
8) Ballast Creek, from the boundary with Area 17 to its confluence with Beaufort River
9) McCalley Creek, from station 15-01A to the headwaters
10) Battery Creek, from confluence with the Beaufort River to the southern Conditionally Approved boundary near Station 15-24.
11) Battery Creek Marina Closure Zone

Restricted:

Battery Creek, between Station 10 and the headwaters, excluding the Conditionally Approved Area.

Conditionally Approved:

1) Battery Creek, from Station 15-24 at the Hwy 280 (Battery Creek) bridge to Station 15-21, (excluding all administratively Prohibited closure zones). The Conditionally Approved area also includes stations 10, 25, 26, 27. The portion of the main channel between stations 10 and 19 will be classified as Restricted.
2) Wallace Creek, the entire tributary, from its confluence with Chowan Creek at station 15-18 to its headwaters.

Approved:

Remaining portions of Area 15.

Station Addition/Deactivation/Modification: None

Analysis of sampling data for Area 15 demonstrates the probability of a significant impact from rainfall exceeding 4.00" in a 24-hour period. Therefore, a precautionary closure of Area 15 will be implemented following rainfall events of greater than 4.00" in a 24-hour period, as measured at the Beaufort-7-SW Weather Station. This methodology is associated with the concept of the Probable Maximum Precipitation (PMP). PMP estimates for the coastal United States has been published in a series of hydro-meteorological reports (HMRs) by the National Weather Service (*National Weather Service*). PMP estimates for South Carolina's growing areas are derived from HMRs 51, 52, and 53 (*National Research Council, 1985*).

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TABLE #1
Shellfish Management Area 15
WATER QUALITY SAMPLING STATIONS DESCRIPTION

Station	Description
01	Brickyard Creek at Range Marker
01A	McCalleys Creek at Pawkie Island
02	Mulligan Creek at Brickyard Creek
10	Battery Creek at Five Points Creek
15	Ballast Creek at Beaufort River
16	Station Creek at Beaufort River
17	Cat Island Creek at Chowan Creek
18	Second Middle Marsh in Chowan Creek
19	Battery Creek 1000 feet below Rabbit Island
20	Capers Creek SSG at Penn Community Services Retreat Center
21	Unnamed creek at (former) discharge of BC High and Cherry Hill High
23	Distant Island State Shellfish Ground
24	Battery Creek - SC Highway 280 bridge
25	Battery Creek - Dowlingwood tributary
26	Battery Creek - Picket Fence tributary
27	Battery Creek - Cherry Hill tributary
28	Battery Creek - Storm water outfall under RR track
29	Battery Creek - Tributary on right side before Battery Shores
30	Battery Creek - Cottage Farms Community Dock
31	Battery Creek - Battery Point Community Dock
32	Battery Creek - Under power line
33	McCalley Creek, 0.5 miles upstream of station 15-01A

(Total 22 Active)

Figure 1.

Shellfish Management Area 15 Prior Classification

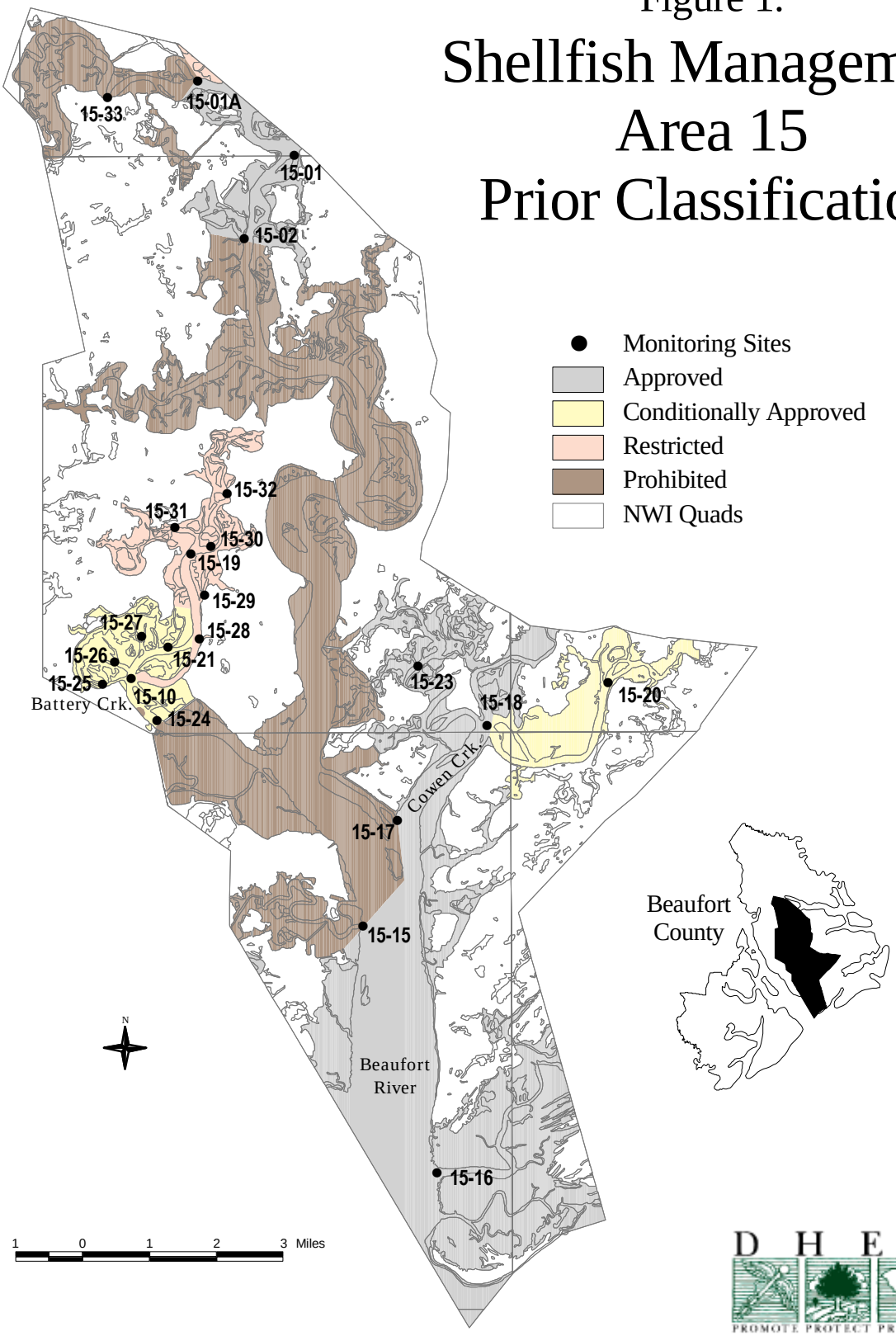

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Figure 2.

Shellfish Management Area 15 Current Classification

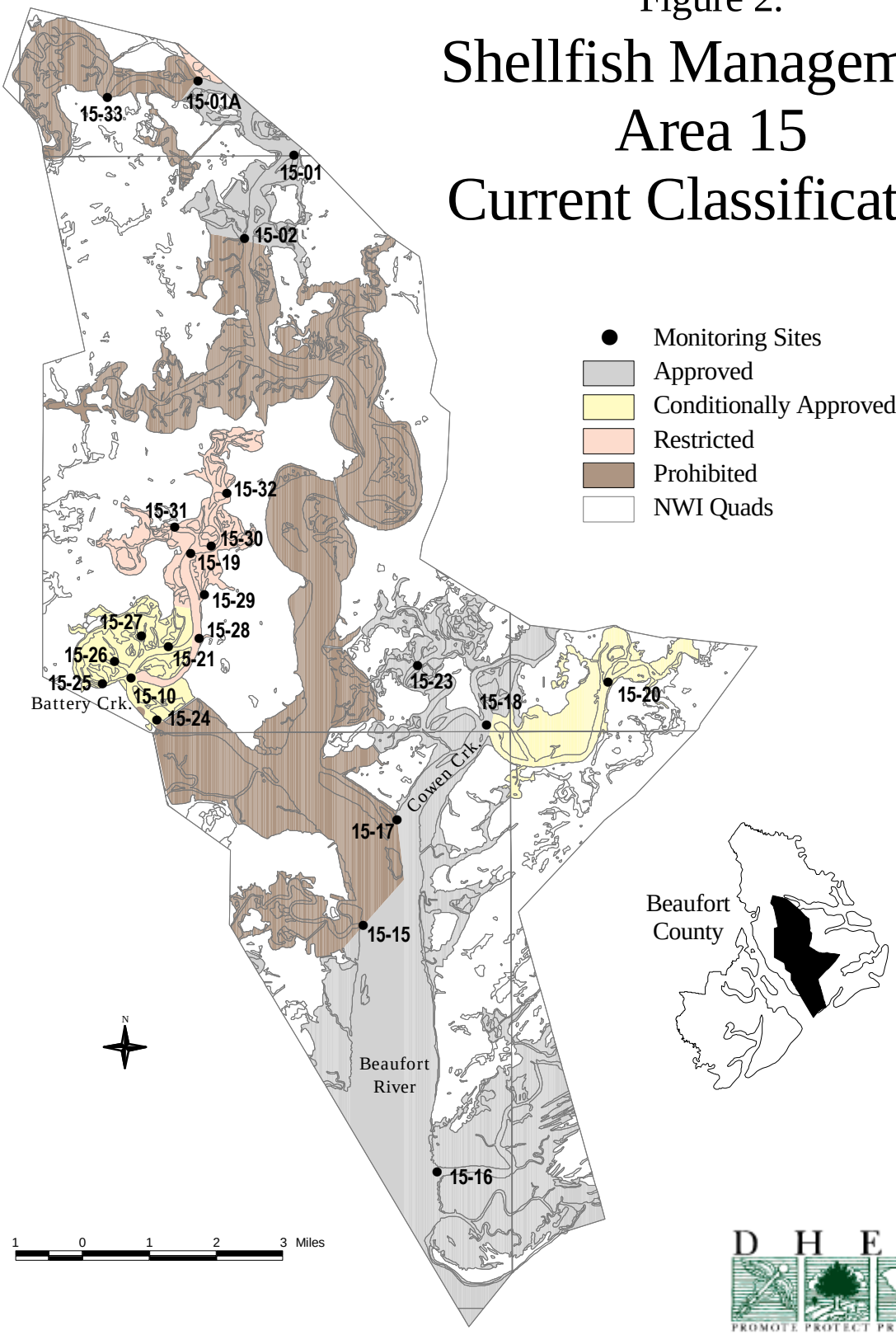

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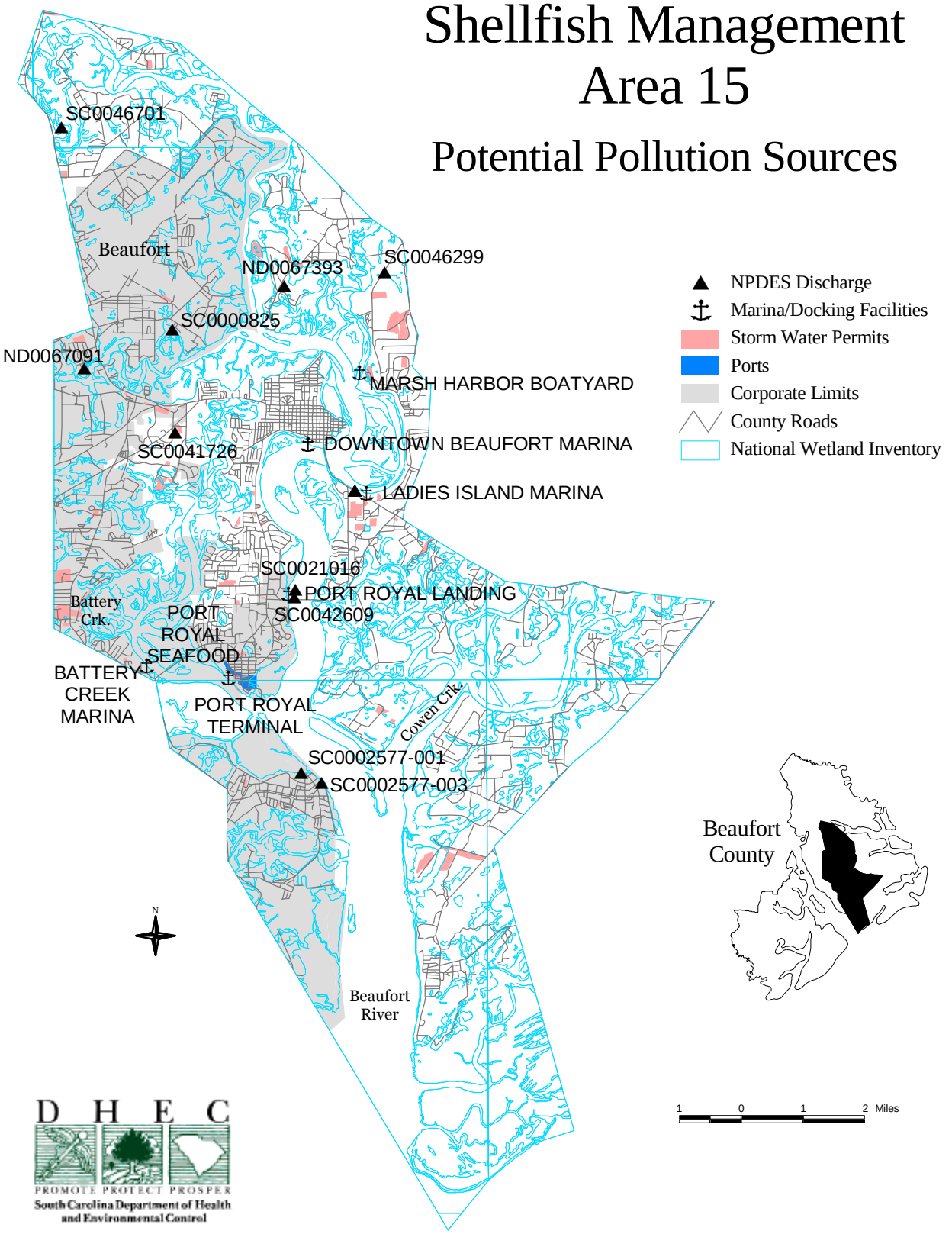
Figure 3.

Shellfish Management Area 15

Potential Pollution Sources



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South Carolina Department of Health and Environmental Control

TABLE #2 (A)
Shellfish Management Area 15
FECAL COLIFORM BACTERIOLOGICAL DATA SUMMARY
from Shellfish Water Quality Sampling Stations between

January 1, 2000 and December 31, 2002

Station #	1	1A	2	10	15	16	17	18	19	20	21
SAMPLES	36	36	28	36	36	36	36	36	36	35	36
GEOMEAN	2.9	3.3	6.2	3.7	3.1	2.1	2.5	3.7	4.2	4.2	5.1
90TH %ILE	6	8	20	8	8	3	4	20	11	15	16
WATER QLTY	A	A	A	A	A	A	A	A	A	A	A
CLASSIFICATION	A	A	P	CA	P	A	P	CA	R	CA	R

Station #	23	24	25	26	27	28	29	30	31	32	33
Samples	36	36	35	36	36	36	36	36	36	36	11
GeoMean	4.0	3.6	6.8	4.5	4.9	4.8	6.7	6.1	9.7	15.1	3.6
90th %ile	11	12	43	13	14	17	24	21	56	115	11
Water Qlty	A	A	A	A	A	A	A	A	R	R	New
Classification	A	P	CA	CA	CA	R	R	R	R	R	New

Station #											
SAMPLES											
GEOMEAN											
90TH %ILE											
WATER QLTY											
CLASSIFICATION											

A - Approved **CA** - Conditionally Approved **R** - Restricted
RND - Restricted/No Depuration **P** - Prohibited

TABLE #2 (B)
Shellfish Management Area 15

FECAL COLIFORM BACTERIOLOGICAL DATA SUMMARY
from Conditional Management Area Stations
collected while in <u>OPEN STATUS</u> between

January 1, 2002 and December 31, 2002

Station #	*10	*21	*24	*25	*26	*27		**18	**20
SAMPLES	4	4	4	4	4	4		4	4
GEOMEAN	5.0	4.3	2.5	5.8	5.5	6.4		4.3	2.7
90TH %ILE	11	13	4	28	17	19		13	6
WATER QLTY	A	A	A	A	A	A		A	A
CLASSIFICATION	CA	CA	CA	CA	CA	CA		CA	CA

Station #									
SAMPLES									
GEOMEAN									
90TH %ILE									
WATER QLTY									
CLASSIFICATION									

Station #									
SAMPLES									
GEOMEAN									
90TH %ILE									
WATER QLTY									
CLASSIFICATION									

**** Battery Creek Conditional Mgmt Area / ** Wallace Creek Conditional Mgmt Area***

A - Approved **CA** - Conditionally Approved **R** - Restricted

RND - Restricted/No Depuration **P** - Prohibited

TABLE #3

Water Quality
Sampling Stations Data

Shellfish Management Area 15

BACTERIOLOGICAL DATA

Data for each shellfish station listed in this report's "Fecal Coliform Bacteriological Data Summary Table" and in other shellfish reports, can be obtained through South Carolina's Department of Health and Environmental Control - Freedom of Information office at the address below.

Freedom of Information
2600 Bull Street
Columbia, SC 29201

Any explanation or clarity needed on the report's content can be obtained by contacting the preparer(s), and/or reviewer(s) listed on the cover page.

TABLE #4

Rainfall Data

Shellfish Management Area 15

SOURCE :
NOAA/National Weather Service
National Climatic Data Center, Asheville, North Carolina 28801

TABLE #4
Shellfish Management Area 15
A SUMMARY OF RAINFALL / During and Prior To Fecal Coliform Sampling

Sample Date	Sample Date + 24 hours	Sample Date	Sample Date - 24 hours	Sample Date - 48 hours	Sample Date - 72 hours
01/24/00	0.72"	0.29"	0.07"	0.00"	0.00"
02/23/00	0.00"	0.00"	0.00"	0.00"	0.16"
03/01/00	0.00"	0.00"	0.00"	0.21"	0.00"
04/03/00	0.00"	0.00"	0.00"	0.00"	0.38"
05/17/00	0.00"	0.00"	0.00"	0.00"	0.00"
06/13/00	0.00"	0.00"	0.00"	0.00"	0.00"
07/18/00	0.00"	0.00"	0.00"	0.00"	0.15"
08/16/00	0.00"	0.00"	0.00"	0.00"	0.03"
09/18/00	0.18"	0.83"	0.00"	0.00"	0.00"
10/18/00	0.00"	0.00"	0.00"	0.00"	0.00"
11/15/00	0.00"	0.00"	0.03"	0.00"	0.00"
12/19/00	0.09"	0.00"	0.00"	0.03"	0.01"
01/09/01	0.00"	0.31"	0.02"	0.00"	0.00"
02/12/01	0.06"	0.70"	0.06"	0.00"	0.00"
03/12/01	0.77"	0.00"	0.00"	0.00"	0.00"
04/17/01	0.00"	0.00"	0.20"	0.00"	0.20"
05/09/01	0.00"	0.00"	0.00"	0.00"	0.00"
06/05/01	no data	no data	0.41"	no data	no data
07/09/01	0.00"	0.00"	0.00"	0.00"	0.00"
08/13/01	1.58"	0.00"	no data	0.02"	0.00"
09/17/01	0.00"	0.00"	0.00"	0.00"	0.00"
10/10/01	0.00"	0.00"	0.00"	0.00"	0.25"
11/28/01	0.00"	no data	0.00"	0.00"	0.03"
12/12/01	0.00"	0.06"	0.63"	0.00"	0.48"
01/14/02	0.4	0.00	no data	0.00	0.00
02/20/02	0.21	0.00	0.00	0.00	no data
03/04/02	0.00	0.05	no data	no data	0.
04/10/02	0.41	0.07	0.02	0.00	0.00
05/15/02	0.00	0.00	0.11	0.00	0.00
06/05/02	0.00	0.00	0.00	0.00	0.00
07/23/02	0.01	0.85	0.00	1.97	no data
08/14/02	0.00	0.07	0.00	0.00	0.00
09/04/02	0.00	0.00	0.16	0.06	0.65
10/21/02	0.00	0.00	0.00	0.00	0.00
11/19/02	0.00	0.00	0.03	1.59	0.00
12/02/02	0.00	0.00	0.00	0.00	0.00

Amounts Shown Are per Day, not Cumulative / Station 380559 - Beaufort 7 – SW

ANNUAL TABLE OF DAILY RAINFALL DATA

SOURCE: City of Beaufort Wastewater Treatment Plant

Beaufort, SC (Station #380559 / 7-SW)

2000	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00
3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.07
4th	0.00	0.00	1.45	0.00	0.00	0.00	0.00	1.72	1.72	0.00	0.00	0.00
5th	0.16	0.00	0.12	0.00	0.00	0.47	0.00	0.53	0.37	0.05	0.16	0.00
6th	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	3.52	0.01	0.00	0.00
7th	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.01	0.00
8th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
9th	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10th	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
11th	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
12th	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.17	0.00	0.00	0.00	0.01
13th	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00
14th	0.00	0.60	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00
15th	0.00	0.87	0.00	1.03	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.02
16th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
17th	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00
18th	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00
19th	0.10	0.00	0.00	0.00	0.00	0.33	0.00	0.41	0.18	0.00	0.39	0.00
20th	0.17	0.03	1.51	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.70	0.09
21st	0.00	0.00	0.16	0.00	0.00	0.06	0.00	0.00	0.23	0.00	0.00	0.00
22nd	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
23rd	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.00
24th	0.29	0.00	0.00	0.00	0.00	0.05	0.30	0.00	0.00	0.00	0.00	0.00
25th	0.72	0.00	0.00	0.61	0.00	0.00	1.37	0.00	0.00	0.00	0.67	0.00
26th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
27th	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28th	0.00	0.21	0.15	0.23	0.00	0.45	0.13	3.00	0.00	0.00	0.00	0.06
29th	0.74	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	1.44
30th	0.41		0.00	0.46	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
31st	0.34		0.38		0.00		0.63	0.00		0.00		0.00

(Monthly Figures) **Year's Rainfall Total: 37.82**

SUM	3.40	1.71	4.90	2.71	0.38	2.45	3.49	5.86	7.85	0.06	2.31	2.70
MAX	0.74	0.87	1.51	1.03	0.38	0.47	1.37	3.00	3.52	0.05	0.70	1.44
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	0.11	0.06	0.16	0.09	0.01	0.08	0.11	0.19	0.26	0.00	0.08	0.09

Note:"--" denotes missing data

(Shellfish Management Areas 14, 15, 16A, 16B, 17, 18, 19)

ANNUAL TABLE OF DAILY RAINFALL DATA

SOURCE: City of Beaufort Wastewater Treatment Plant

Beaufort, SC (Station #380559 / 7-SW)

2001	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1st	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	--	0.00	0.00	0.00
2nd	0.00	0.00	0.00	0.00	0.00	--	0.04	0.00	--	0.00	0.00	0.00
3rd	0.00	0.00	0.03	0.00	0.00	--	0.02	0.00	--	0.00	0.00	0.00
4th	0.00	0.18	0.85	0.04	0.00	0.41	0.42	0.00	0.75	0.00	0.00	0.00
5th	0.00	0.08	0.02	0.00	0.00	--	0.59	0.01	1.30	0.00	0.00	0.00
6th	0.00	0.00	0.00	0.00	0.00	--	0.00	0.10	0.13	0.00	0.00	0.00
7th	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.23	0.25	0.00	0.00
8th	0.02	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.23	0.00	0.00	0.00
9th	0.31	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.02	0.00	0.00	0.48
10th	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.02	0.05	0.00	--	0.00
11th	0.00	0.06	0.00	0.00	0.00	0.05	0.00	--	0.00	0.00	--	0.63
12th	0.10	0.70	0.00	0.00	0.00	1.30	0.00	0.00	0.05	0.02	0.00	0.06
13th	0.09	0.06	0.77	0.00	0.00	--	1.06	1.58	0.00	--	0.00	0.00
14th	0.00	0.02	0.00	0.20	0.00	0.20	0.28	0.66	0.00	--	0.00	0.00
15th	0.00	0.00	0.15	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	--
16th	0.00	0.00	0.80	0.20	0.00	--	0.00	0.00	0.00	0.00	0.00	--
17th	0.00	0.11	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	--	0.00
18th	0.03	0.00	0.00	0.00	0.00	0.04	0.00	2.37	0.00	0.00	--	0.07
19th	0.00	0.00	0.00	0.00	0.00	--	0.00	2.30	0.00	0.00	0.00	0.00
20th	0.45	0.00	1.05	0.00	0.00	0.22	0.00	0.45	0.00	--	0.00	0.00
21st	0.00	0.00	0.51	0.00	0.00	0.11	--	1.02	0.00	--	0.00	0.00
22nd	0.00	0.03	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00
23rd	0.00	0.35	0.00	0.00	0.05	0.04	0.03	0.00	--	0.00	--	0.00
24th	0.00	0.00	0.00	0.00	0.00	0.05	1.00	0.00	0.04	0.00	0.00	0.02
25th	0.00	0.00	0.01	0.00	0.00	--	1.10	0.00	0.90	0.00	0.03	0.00
26th	0.00	0.06	0.00	0.27	0.00	0.28	0.03	0.00	0.01	0.00	0.00	0.00
27th	0.00	0.00	0.00	0.00	0.00	0.28	0.08	0.00	0.00	0.00	0.00	0.00
28th	0.00	0.01	0.00	0.00	0.00	0.01	--	0.00	0.00	--	--	0.00
29th	0.00		0.21	0.00	0.00		--	0.00	0.00	0.00	0.00	0.00
30th	0.00		0.95	0.00	0.40		0.00	0.02	0.00	0.00	0.00	0.00
31st	0.80		0.03		0.00		0.00			0.00		0.00

(Monthly Figures) **Year's Rainfall Total: 32.02**

SUM	1.80	1.66	5.38	0.71	0.45	3.57	4.65	8.53	3.71	0.27	0.03	1.26
MAX	0.80	0.70	1.05	0.27	0.40	1.30	1.10	2.37	1.30	0.25	0.03	0.63
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	0.06	0.06	0.17	0.02	0.01	0.22	0.17	0.29	0.15	0.01	0.00	0.04

Note:"--" denotes missing data

(Shellfish Management Areas 14, 15, 16A, 16B, 17, 18, 19)

ANNUAL TABLE OF DAILY RAINFALL DATA

SOURCE: City of Beaufort Wastewater Treatment Plant

Beaufort, SC (Station #380559 / 7-SW)

2002	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1st	0.00	0.00	0.00	2.60	0.00	0.00	--	0.81	0.65	0.05	0.00	0.00
2nd	0.10	0.00	--	0.00	0.00	0.00	0.00	0.02	0.06	0.15	0.00	0.00
3rd	0.50	--	--	0.00	0.00	0.00	0.00	--	0.16	0.00	0.00	0.00
4th	0.08	0.00	0.05	0.00	--	0.00	0.00	0.02	0.00	--	0.00	0.00
5th	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.25	0.00
6th	--	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.78	0.13
7th	0.00	1.01	0.00	0.00	0.00	0.00	--	0.49	0.00	0.02	0.04	--
8th	0.00	0.25	0.00	0.02	--	0.00	0.00	0.00	0.00	0.00	0.00	--
9th	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
10th	0.00	0.27	0.00	0.41	0.00	0.00	0.28	0.00	--	1.85	1.12	0.73
11th	0.00	0.15	0.00	0.04	0.00	0.00	0.00	0.00	0.00	--	0.00	0.35
12th	0.00	0.00	0.00	--	0.00	0.00	2.16	0.00	0.00	0.04	1.20	0.04
13th	--	0.00	0.35	0.00	0.00	0.00	--	0.00	--	0.04	0.89	0.56
14th	0.00	0.00	0.00	0.00	0.11	0.00	0.60	0.07	0.90	0.05	0.00	0.03
15th	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.02	0.00	0.00
16th	0.00	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17th	0.00	--	--	0.00	0.00	--	0.00	--	0.00	0.00	1.59	0.00
18th	0.00	0.00	0.03	0.00	0.00	0.02	0.00	0.25	0.22	0.00	0.03	0.00
19th	--	0.00	0.00	0.00	1.10	0.63	0.00	0.02	0.16	0.00	0.00	0.04
20th	--	0.00	0.00	0.00	0.00	3.85	--	0.00	0.11	0.00	0.00	0.20
21st	0.00	0.21	0.18	0.00	0.00	1.21	1.97	0.00	0.00	0.00	0.00	0.02
22nd	0.10	0.00	0.20	0.00	--	0.01	0.00	0.00	0.58	0.00	0.09	0.00
23rd	0.01	0.01	0.00	0.00	0.00	0.76	0.85	0.00	1.20	0.00	0.00	0.00
24th	0.00	0.04	--	0.00	0.00	0.92	0.01	0.04	0.00	0.09	0.00	0.08
25th	0.01	0.00	0.00	0.00	--	0.78	0.60	0.84	0.84	0.09	0.00	1.33
26th	0.14	0.00	0.00	--	0.00	0.01	0.00	0.30	0.51	0.00	0.00	0.00
27th	0.00	0.00	0.48	--	0.00	0.00	0.00	--	--	0.00	0.00	0.00
28th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.49	0.00	0.00
29th	0.00		0.00	0.00	0.00		0.00	2.23	2.05	0.38	0.00	0.00
30th	0.00		0.00		0.00		0.00	1.50		0.00	0.00	0.00
31st	0.00		--		0.00		0.00					0.00

(Monthly Figures) **Year's Rainfall Total: 50.97**

SUM	1.34	1.96	1.29	3.14	1.21	8.19	6.48	6.59	8.00	3.27	5.99	3.51
MAX	0.50	1.01	0.48	2.60	1.10	3.85	2.16	2.23	2.05	1.85	1.59	1.33
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	0.05	0.08	0.05	0.12	0.04	0.30	0.24	0.26	0.32	0.12	0.20	0.13

Note:"--" denotes missing data

(Shellfish Management Areas 14, 15, 16A, 16B, 17, 18, 19)

Management Plan for Conditionally Approved Areas

Shellfish Management Area 15

Shellfish Management Area 15
WALLACE CREEK
CONDITIONAL AREA MANAGEMENT PLAN

July 1, 2003

I. AREA DESCRIPTION

The 2003 Annual Update includes the following written description of Wallace Creek=s Conditionally Approved areas, in addition to a prior and a current classification map reflecting the Conditionally Approved area boundaries.

> A*Wallace Creek, the entire tributary, from its confluence with Chowan Creek at station 15-18 to its headwaters.*@

The Wallace Creek area was first classified as Conditionally Approved in the 2000 Annual Update. Most of Wallace Creek is a State Shellfish Ground (S-118) but there is also a Public Shellfish Ground (R-121) near its confluence with Chowan Creek and a Culture Permit (C-119) in the headwaters area.

In the 2003 Annual Update, water quality at Station 20 in Wallace Creek meets the statistical criteria for Approved classification. Historical sampling data indicates that this station is impacted by rainfall therefore the harvesting status of this station will remain Conditionally Approved.

There are no mariculture operations in the area, therefore year round harvesting does not occur. The harvesting season is from September 16 through May 14.

II. FACTORS INDICATING SUITABILITY OF WALLACE CREEK AS A CONDITIONALLY APPROVED AREA

A. The major pollution source adversely affecting water quality in Wallace Creek is nonpoint source in origin.

C. Wallace Creek receives no substantial freshwater input other than from rainfall and associated runoff.

D. Wallace Creek has a tidal range that facilitates sufficient exchange with coastal ocean waters. This exchange results in a typical salinity range of 20 ppt to 28 ppt. Depressed salinities due to rainfall are temporary.

E. Wallace Creek is relatively small geographically and does not present major patrol difficulties.

III. PREDICTABLE POLLUTION EVENTS THAT CAUSE CLOSURE

A. Meteorological Events

1. The Wallace Creek Conditionally Approved area will be closed upon receipt of 1.20" or more of rainfall, as measured at weather station 380559- Beaufort 7 SW, located at the City of Beaufort WWTP.

2. A review of rainfall data for the past five years (1998 to 2002) indicates that the area will receive an average of 5.0 rainfall events per year equal to or greater than 1.20". Although some events are likely to crossover, each event is considered to be separated from the subsequent event by a minimum duration of 14 days. With this in mind, one could expect the Conditionally Approved area in Wallace Creek to remain in an open status 71% (172 days) of the harvest season (September 16 through May 15; a total of 242 days).

Number of 24- hour Rainfall events $ 1.20 inches Sept. 16 to May 15

1998	10
1999	5
2000	3
2001	0
2002	7
Total	25) 5yrs = 5.0 avg. 5.0 x 14 day closure = 70.0 days closed

(70.0) 242 days in harvest season= 29% closed, 71% open)

B. Seasonal Events

Any significant input from migratory waterfowl populations is offset by tidal flushing.

IV. IMPLEMENTATION OF A CONDITIONAL AREA CLOSURE

The Low Country EQC District Shellfish Program manager is the responsible party for determining compliance with all aspects of this plan, including the tracking of rainfall criteria violations. In the event that the manager shall be unavailable, a responsible employee shall be designated responsibility for tracking, compliance, and notification procedures.

A. Implementation of Closure (September through May): The following procedures shall be used in the event a closure is necessary:

1. The State Shellfish Program Manager (or his designee) shall be notified immediately.

2. SCDHEC's Office of Media Relations (Media Relations) is the responsible

authority for issuance of news releases. Media Relations shall be notified within two hours of the determination of the need for a closure. They shall be provided with specific information regarding the pollution event and affected area. In the event of the need for a weekend or holiday closure, Low Country District Shellfish program staff will contact Media Relations through their on-call pager number or through the Department's emergency response telephone number.

3. Within four hours of a determination of the need for a closure, the Low Country District Shellfish staff shall notify the South Carolina Department of Natural Resources (SCDNR), Office of Commercial Fisheries Management, & SCDNR Law Enforcement (Ft. Johnson), by telephone and/or fax.

4. All SCDHEC Certified Shellfish Shippers with interests in the affected area shall be notified by Low Country District Shellfish program staff. SCDNR is the State agency having authority for the issuance of individual commercial shellfish harvest permits and should provide notification to individual permittees.

5. Prior to September 16, SCDHEC shall post an adequate number of AWarning Conditional Area@ signs throughout the area. Additionally, maps indicating the current condition of the affected area will be posted at locations adjacent to the area suitable for public information display. Map postings shall take place immediately following issuance of the draft news release.

6. During the closure period, a Low Country EQC District law enforcement officer shall insure patrols are conducted at a frequency sufficient to deter illegal harvest activities. Schedules shall include night and weekend patrols. Documentation of these patrols shall be maintained. Unless a Low Country EQC officer has personal knowledge that a violator has been notified of the closure, under no circumstance shall a summons be issued during the first 48 hours following the initial call to Media Relations. Written warnings should be issued during this 48 hour period and all shellfish should be returned to the water.

B. Management of Conditional Areas Extraneous to the Normal Shellfish Harvest Season

The Wallace Creek Conditionally Approved area shall remain in the closed status from May 15 through September 15.

C. Enforcement of Closures

1. DHEC is the agency responsible for public health protection. This includes public notice and closures of shellfish management areas

2. A Low Country EQC District law enforcement officer shall insure that the area is patrolled at a frequency adequate to prevent illegal harvesting. Documentation of these patrols shall be maintained. DHEC patrol officers may coordinate with other law enforcement officers to insure adequate area coverage.

V. CONTROL ELEMENTS USED TO REOPEN AFTER A POLLUTION EVENT

Opening of areas following closure due to violation of management plan criteria shall adhere to the following control elements.

A. The area shall remain closed for a minimum period of 14 consecutive days following the end of a rainfall event. If, during the initial closure period, a subsequent event occurs that meets the criteria for a closure, the area shall remain closed for 14 consecutive days following the occurrence of the subsequent event.

B. The bacteriological water quality at all stations located within, or on the boundary of, the closed Conditionally Approved area shall be assessed prior to reopening. For the year 2003 report this shall include stations 18 and 20. The area shall remain closed and be re-sampled at a later date if either sample exceeds a fecal coliform MPN of 43.

C. Low Country District Shellfish staff and the State Shellfish Program Manager (or his designee) shall concur on the decision to reopen the area.

D. Low Country District Shellfish shall notify SCDNR, Division of Commercial Fisheries Management, of the opening immediately following issuance of the news release.

E. Local Certified Shellfish Shippers shall be notified by SCDHEC of the opening as soon as possible.

F. Map postings shall be updated to reflect the open status.

VI. MANAGEMENT PLAN EVALUATION

This plan shall be evaluated once per year and included as a part of the Shellfish Management Area 15 Annual Update.

Shellfish Management Area 15
EVALUATION OF WALLACE CREEK
CONDITIONAL AREA MANAGEMENT PLAN

July 1, 2003

I. BACKGROUND INFORMATION

The following is a description of the Wallace Creek Conditionally Approved areas as indicated in the July, 2000 Annual Update:

> A*Wallace Creek, the entire tributary, from its confluence with Chowan Creek at station 15-18 to its headwaters.*@

The Wallace Creek area was first classified as Conditionally Approved in the 2000 Annual Update. Most of Wallace Creek is a State Shellfish Ground (S-118) but there is also a Public Shellfish Ground (R-121) near its confluence with Chowan Creek and a Culture Permit (C-119) in the headwaters area.

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The evaluation period is calendar year 2002. Closure of the Conditionally Approved area was based on rainfall of 1.20" or greater in a 24-hour period. Rainfall is measured at the City of Beaufort WWTP.

There are no mariculture activities in this area, therefore, no year-round harvesting takes place.

II. REEVALUATION OF CONDITIONAL CLASSIFICATION

During the shellfish harvest season, there were seven rainfall events greater than or equal to 1.20":

Date	Event	Press Release	Sample Date	Reopening Date
*2-7-02	Statewide Closure Cond. Areas	2-7-02		
	Opened Cond. Areas (15, 16A)	2-22-02	2-20-02	2-22-02
4-1-02	Closed Area- Rainfall (2.60”)	4-1-02		
	Opened Area	4-15-02	4-10-02	4-15-02
9-23-02	Closed Area- Rainfall (1.20”)	9-23-02		
9-30-02	Closure extended- Rainfall (2.05”)			
	Opened Area	10-10-02	9-7,9-02	10-10-02
10-11-02	Statewide closure- Tropical Storm			

	Advisory, Beaufort rain 1.80”			
Date	Event	Press Release	Sample Date	Reopening Date
	Opened Area	10-25-02	10-21-02	10-26-02
11-12-02	Closed Area- Rainfall (1.20”)	10-13-02		
11-17-02	Closure extended –Rainfall (1.59”)			
	Opened Area	12-4-02	12-2-02	12-4-02
12-25-02	Closed Area- Rainfall (1.33”)	12-27-02		
	Opened Area	1-8-03	1-6-03	1-8-03

* Note: The rainfall measured at Beaufort (1.01”) on February 7, 2002 did not exceed the management plan criteria.

Compliance - For the evaluation period, compliance with the Wallace Creek Conditional Management Area plan was satisfactory.

Cooperation - Cooperation by City of Beaufort WWTP personnel in reporting rainfall events has been excellent. WWTP personnel readily supply necessary rainfall data upon request.

Evaluation of Water Quality with Respect to the Bacteriological Standards -
For the Annual Update review period (January 1, 2000 through December 31, 2002) for Shellfish Management Area 15, water quality at Station 20 in Wallace Creek met the statistical criteria for an Approved classification Approved Areas Rainfall Correlation)

For the calendar year 2002, analysis of samples collected at Station 20 in the Wallace Creek Conditional Area while in the Open status indicates the station meets the statistical criteria for Approved classification (see data sheets- Conditional Area in Open Status).

III. RECOMMENDATIONS

No changes to the boundary of the Wallace Creek Conditional Area are recommended in the 2003 Annual Update. The rainfall action level will remain at 1.20 inches per 24 hours in the 2003 Annual Update. This action level will be evaluated annually.

Shellfish Management Area 15
BATTERY CREEK
CONDITIONAL AREA MANAGEMENT PLAN

JULY 2003

I. AREA DESCRIPTION

The 2003 Annual Update includes the following written description of Battery Creek=s Conditionally Approved areas, in addition to a prior and a current classification map defining the Conditionally Approved area boundaries.

> *ABattery Creek, from station 15-24 at the Hwy 280 (Battery Creek) bridge to station 15-21, (excluding all administratively Prohibited closure zones). The Conditionally Approved area also includes stations 10, 25, 26, 27. The portion of the main channel between stations 10 and 19 will be classified as Restricted.@*

The Battery Creek area was first classified as Conditionally Approved in the 1997 Annual Update. In January 2001, SCDNR assigned a Culture Permit, C-080, to the area. There have been no changes made to the boundary of the Battery Creek Conditionally Approved area in the 2003 Annual Update. However, a 410 foot administratively Prohibited closure zone has been added around Battery Creek Marina.

Prior to May 1997 there were three sample stations (10, 19, and 21) in Battery Creek. In May 1997, sampling began at nine newly created stations in Battery Creek and its tributaries. All nine stations were classified for the first time in the 2000 Annual update.

For the Annual Update review period (January 1, 2000 through December 31, 2002) for Shellfish Management Area 15, all stations (10, 21, 24, 25, 26, and 27) in the Battery Creek Conditional Management area met the statistical criteria for Approved classification. Historical sampling data indicates that these stations are impacted by rainfall therefore the harvesting status of these stations will remain Conditionally Approved.

There are no mariculture operations in the area therefore year round harvesting does not occur. The harvesting season is from September 16th through May 15th.

II. FACTORS INDICATING SUITABILITY OF BATTERY CREEK AS A CONDITIONALLY APPROVED AREA

A. The major pollution source adversely affecting water quality in Battery Creek is nonpoint source in origin.

B. Battery Creek receives no substantial freshwater input other than from rainfall and associated runoff.

C. Battery Creek has a tidal range that facilitates sufficient exchange with coastal ocean waters. This exchange results in a typical salinity range of 20 ppt to 28 ppt. Depressed salinities due to rainfall are temporary.

D. Battery Creek is relatively small geographically and does not present major patrol difficulties.

III. PREDICTABLE POLLUTION EVENTS THAT CAUSE CLOSURE

A. Meteorological Events

1. The Battery Creek Conditionally Approved area will be closed upon receipt of 1.20" or more of rainfall, as measured at weather station 380559- Beaufort 7 SW, located at the City of Beaufort WWTP.

2. A review of rainfall data for the past five years (1998 to 2002) indicates that the area will receive an average of 5.0 rainfall events per year equal to or greater than 1.20". Although some events are likely to crossover, each event is considered to be separated from the subsequent event by a minimum duration of 14 days. With this in mind, one could expect the Conditionally Approved area in Battery Creek to remain in an open status 71% (172 days) of the harvest season (September 16 through May 15; a total of 242 days).

Number of 24- hour Rainfall events $ 1.20 inches Sept. 16 to May 15

1998	10
1999	5
2000	3
2001	0
2002	7
Total	25) 5yrs = 5.0 avg.

5.0 x 14 day closure = 70.0 days closed

(70.0) 242 days in harvest season= 29% closed, 71% open)

B. Seasonal Events

Any significant input from migratory waterfowl populations is offset by tidal flushing.

IV. IMPLEMENTATION OF A CONDITIONAL AREA CLOSURE

The Low Country EQC District Shellfish Program manager is the responsible party for determining compliance with all aspects of this plan, including the tracking of rainfall criteria violations. In the event that the manager shall be unavailable, a responsible employee shall be designated responsibility for tracking, compliance, and notification procedures.

A. Implementation of Closure (September through May)

The following procedures shall be used in the event a closure is necessary:

1. The State Shellfish Program Manager (or his designee) shall be notified immediately.

2. Within four hours of a determination of the need for a closure, the Low Country District Shellfish staff shall notify the South Carolina Department of Natural Resources (SCDNR), Office of Commercial Fisheries Management, & SCDNR Law Enforcement (Ft. Johnson), by telephone and/or fax.

3. All SCDHEC Certified Shellfish Shippers with interests in the affected area shall be notified by Low Country District Shellfish program staff. SCDNR is the State agency having authority for the issuance of individual commercial shellfish harvest permits and should provide notification to individual permit tees.

4. During the closure period, a Low Country EQC District law enforcement officer shall insure patrols are conducted at a frequency sufficient to deter illegal harvest activities. Schedules shall include night and weekend patrols. Documentation of these patrols shall be maintained. Unless a Low Country EQC officer has personal knowledge that a violator has been notified of the closure, under no circumstance shall a summons be issued during the first 48 hours following the initial call to Media Relations. Written warnings should be issued during this 48 hour period and all shellfish should be returned to the water.

B. Management of Conditional Areas Extraneous to the Normal Shellfish Harvest Season

The Battery Creek Conditionally Approved area shall remain in the closed status from May 16 through September 15.

C. Enforcement of Closures

1. DHEC is the agency responsible for public health protection. This includes public notice and closures of shellfish management areas

2. The Battery Creek Conditionally Approved area will be routinely patrolled during closures of Conditionally Approved areas. DHEC patrol officers may coordinate with other law enforcement officers to insure adequate area coverage.

3. The Battery Creek Conditionally Approved area shall remain in the closed status from May 16 through September 15. The area will be patrolled in accordance with NSSP guidelines.

V. CONTROL ELEMENTS USED TO REOPEN AFTER A POLLUTION EVENT

Opening of areas following closure due to violation of management plan criteria shall adhere to the control elements.

A. The area shall remain closed for a minimum period of 14 consecutive days following the end of a rainfall event. If, during the initial closure period, a subsequent event occurs that meets the criteria for a closure, the area shall remain closed for 14 consecutive days following the occurrence of the subsequent event.

B. The bacteriological water quality at all stations located within, or on the boundary of, the closed Conditionally Approved area shall be assessed prior to reopening. For the year 2002 report these stations are 10, 21, 24, 25, 26, 27, and 28. The area shall remain closed and be re-sampled at a later date if any sample exceeds a fecal coliform MPN of 43.

C. Low Country District Shellfish staff and the State Shellfish Program Manager (or his designee) shall concur on the decision to reopen the area.

D. Low Country District Shellfish shall notify SCDNR, Division of Commercial Fisheries Management, of the opening immediately following issuance of the news release.

E. Local Certified Shellfish Shippers shall be notified by SCDHEC of the opening as soon as possible.

F. Map postings shall be updated to reflect the open status.

VI. MANAGEMENT PLAN EVALUATION

This plan shall be evaluated once per year and included as a part of the Shellfish Management Area 15 Annual Update.

Shellfish Management Area 15
EVALUATION OF BATTERY CREEK
CONDITIONAL AREA MANAGEMENT PLAN

July, 2003

I. BACKGROUND INFORMATION

The following is a description of the Area 15 Conditionally Approved areas as indicated in the July, 2002 Annual Update:

A*Battery Creek, from station 15-24 at the Hwy 280 (Battery Creek) bridge to station 15-21, (excluding all administratively Prohibited closure zones). The Conditionally Approved area also includes stations 10, 25, 26, 27. The portion of the main channel between stations 10 and 19 will be classified as Restricted.*@

This area was first classified as Conditionally Approved in the 1997 Annual Update. The boundary of the Conditionally Approved area was changed in the 2000 Annual Update. In January 2001, SCDNR assigned a Culture Permit, C-080, to the Battery Creek Conditional Management Area. A map indicating the Area 15 Battery Creek Conditionally Approved area boundary is included in the 2003 Annual Reports.

The evaluation period is calendar year 2002. Closure of the Conditionally Approved area was based on rainfall of 1.20" or greater in a 24-hour period. Rainfall is measured at the City of Beaufort WWTP.

There are no mariculture activities in this area, therefore, no year-round harvesting takes place.

II. REEVALUATION OF CONDITIONAL CLASSIFICATION

During the shellfish harvest season, there were seven rainfall events greater than or equal to 1.20":

Date	Event	Press Release	Sample Date	Reopening Date
*2-7-02	Statewide Closure Cond. Areas	2-7-02		
	Opened Cond. Areas (15, 16A)	2-22-02	2-20-02	2-22-02
4-1-02	Closed Area- Rainfall (2.60")	4-1-02		
	Opened Area	4-15-02	4-10-02	4-15-02
9-23-02	Closed Area- Rainfall (1.20")	9-23-02		
9-30-02	Closure extended- Rainfall (2.05")			
	Opened Area	10-10-02	9-7,9-02	10-10-02
10-11-02	Statewide closure- Tropical Storm Advisory, Beaufort rain 1.80"			
	Opened Area	10-25-02	10-21-02	10-26-02
11-12-02	Closed Area- Rainfall (1.20")	10-13-02		
11-17-02	Closure extended –Rainfall (1.59")			
	Opened Area	12-4-02	12-2-02	12-4-02
12-25-02	Closed Area- Rainfall (1.33")	12-27-02		
	Opened Area	1-8-03	1-6-03	1-8-03

* Note: The rainfall measured at Beaufort (1.01") on February 7, 2002 did not exceed the management plan criteria.

Compliance - For the evaluation period, the Battery Creek Conditional Management Area was managed in accordance with the plan.

Cooperation - Cooperation by City of Beaufort WWTP personnel in reporting rainfall events has been excellent. WWTP personnel readily supply necessary rainfall data upon request.

Evaluation of Water Quality with Respect to the Bacteriological Standards - For the

Annual Update review period (January 1, 2000 through December 31, 2002) for Shellfish Management Area 15, all stations (10, 21, 24, 25, 26, and 27) in the Battery Creek Conditional Management Area met the statistical criteria for Approved classification

For the calendar year 2002, analysis of samples collected at each station in the Battery Creek Conditional Area while in the Open status indicate all meet the statistical criteria for Approved classification (see data sheets- Conditional Area in Open Status).

III. RECOMMENDATIONS

No changes to the boundary of the Battery Creek Conditional Area are recommended in the 2003 Annual Update. The rainfall action level will remain 1.20 inches per 24 hours. This action level will be evaluated annually.